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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/518,194

Applicant(s)

NOMURA ET AL.

Examiner

EDNA WONG

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date See Continuation Sheet

Continuation of Attachment(s) 3. Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :September 20, 2005, January 6, 2006, and April 23, 2007.

Election/Restrictions

Applicant's election without traverse of Group I, claims **1-10**, in the reply filed on December 2, 2008 is acknowledged.

The requirement is still deemed proper and is therefore made FINAL.

Accordingly, claims **11-20** are withdrawn from consideration as being directed to a non-elected invention.

Drawings

Figure **17** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Applicants' specification discloses that "Fig. 17 is a perspective view showing the conventional non-contact carrying device for a film disclosed in JP-3135176" (page 16, lines 12-13).

Specification

The disclosure is objected to because of the following informalities:

page 7, line 21, it is unclear what is meant by the words "is sopped".

page 10, line 22, it is unclear what is meant by the words "producing patters".

page 33, line 23, it is unclear what is meant by the words "In he case".

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

- I. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for electroplating, does not reasonably provide

enablement for forming. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to carry out the invention commensurate in scope with these claims.

Claim 1

line 6, recites "forming".

Applicants' specification discloses that a continuous electroplating apparatus is used to produce the plated film (page 16, lines 18-22; and Fig. 1). The word "forming" is open to read on electroless plating, and claim 1 does not recite a positive method step for electroplating the plating layer.

II. Claims **1-10** are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the method steps.

Claim 1

lines 1-13, recite:

"A method for producing a plated film, in which a film carrying means for carrying a film having a conductive surface, a cathode roll, and a plating bath arranged in the upstream and/or downstream side of the cathode roll and accommodated with a plating solution and an anode are used, wherein the film is carried by the film carrying means, the conductive surface of the film is brought into electrical contact with the cathode roll through a liquid layer, and passed through the plating bath for forming a plating layer on the conductive surface of the film, **characterized in that** the following relation is satisfied:

$$E_0 > [(I/C_s) \times d]/\sigma$$

where E_0 is the reduction potential of a metal constituting the plating layer; I is the value of a current flowing through the cathode roll for plating; C_s is the area of the conductive surface of the film in electrical contact with the cathode roll through the liquid layer; d is

. the thickness of a gap between the cathode roll and the conductive surface of the film; and σ is the conductivity of a liquid constituting the liquid layer.”

Claim 1, as presently written, reads like one long preamble, or is Claim 1 a Jepson claim and the positive method step begins after the phrase “characterized in that”? Claim 1, as presently written, leaves that Examiner to pick and choose which claim limitations are the positive/active process steps of Applicants’ method.

lines 1-2, recite “in which a film carrying means for carrying a film having a conductive surface, a cathode roll, and a plating bath arranged in the upstream and/or downstream side of the cathode roll and accommodated with a plating solution and an anode are used”.

It is unclear what the film carrying means is. Is this the cathode roll? This part is not shown in any of Applicants’ Figures.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

I. Claims **1, 3 and 9-10** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **JP 63-250492** ('492).

JP '492 teaches a method for producing a plated film,
in which a film carrying means for carrying a film having a conductive surface **1** (= a metallic strip), a cathode roll **2** (= a conductor roll), and a plating bath **7** (= a plating cell) arranged in the upstream and/or downstream side of the cathode roll (Fig. 1) and accommodated with a plating solution **3** (= electrolyte) and an anode **4** are used,
wherein the film is carried by the film carrying means, the conductive surface of the film **1** is brought into electrical contact with the cathode roll (= with electric current supplied through conductor rolls **2**) through a liquid layer (= from water and an electrolytic solution that are selectively jetted from nozzles **12, 13** on the rolls **2**), and passed through the plating bath **7** for forming a plating layer (= zinc) on the conductive surface of the film (page 3, Table) [abstract].

The conductivity of the liquid constituting the liquid layer existing in the gap is from 1 mS/cm to 100 mS/cm (= the ZnSO₄ electrolyte) [page 3, Table].

A material for constituting the plating layer and precipitated on a surface of the cathode roll is removed by means of a blade and/or an elastic body **8** (= a polisher) provided in contact with the surface of the cathode roll (abstract).

A liquid is supplied continuously or intermittently to at least one of the cathode roll, the blade and the elastic body (= water and an electrolytic solution are selectively

jettted from nozzles **12, 13** on the rolls **2**) [abstract].

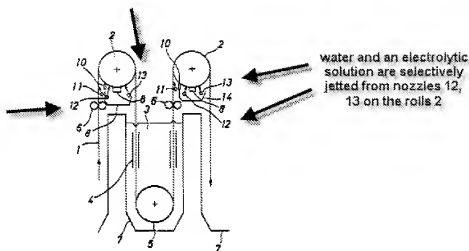
The method of JP '492 differs from the instant invention because JP '492 does not disclose wherein the method is characterized in that the following relation is satisfied:

$$E_0 > [(I/C_s) \times d]/\sigma$$

where E_0 is the reduction potential of a metal constituting the plating layer; I is the value of a current flowing through the cathode roll for plating; C_s is the area of the conductive surface of the film in electrical contact with the cathode roll through the liquid layer; d is the thickness of a gap between the cathode roll and the conductive surface of the film; and σ is the conductivity of a liquid constituting the liquid layer.

The invention as a whole would have been anticipated and/or obvious to one having ordinary skill in the art at the time the invention was made because JP '492 teaches a similar method as presently claimed. Similar processes can reasonably be expected have the similar properties.

As shown in Fig. 1 of JP '492, water and an electrolytic solution are selectively jettted from nozzles **12, 13** on the rolls **2**:



By the positions of the nozzles **12, 13**, it appears that the jetted electrolytic solution would have been attracted to the surface of the conductor roll **1** and provided a thin film of electrolytic solution between the surface of the roll and the metallic strip **1** to some degree.

II. Claims **1** and **3** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **GB 551,103** ('103).

GB teaches a method for producing a plated film,

in which a film carrying means for carrying a film having a conductive surface **S** (= a metallic strip) [page 2, lines 31-40], a cathode roll **2** (= an entry conductor roll) [page 1, lines 85-88], and a plating bath **8** arranged in the upstream and/or downstream side of the cathode roll and accommodated with a plating solution and an anode are used (= for successful plating operation) [page 2, lines 17-19; and Fig. 1],

wherein the film is carried by the film carrying means, the conductive surface of

the film **S** is brought into electrical contact with the cathode roll **2** through a liquid layer (= a thin film of electrolyte serves to provide a good conducting medium between the surface of the roll and the strip) [page 2, lines 8-11], and passed through the plating bath for forming a plating layer on the conductive surface of the film (= the continuous strip being fed into the plating bath **8** which is necessary for successful plating operation) [page 2, lines 17-19].

The conductivity of the liquid constituting the liquid layer existing in the gap is from 1 mS/cm to 100 mS/cm (= a tin plating solution) [page 2, lines 38-40].

A liquid is supplied continuously or intermittently to at least one of the cathode roll, the blade and the elastic body (= a pipe **3** is provided with a plurality of nozzles or openings **4** for spraying electrolyte upon the conductor roll surface) [page 1, lines 95-101; and Fig. 2].

The method of GB '103 differs from the instant invention because GB '103 does not disclose wherein the method is characterized in that the following relation is satisfied:

$$E_0 > [(I/C_s) \times d]/\sigma$$

where E_0 is the reduction potential of a metal constituting the plating layer; I is the value of a current flowing through the cathode roll for plating; C_s is the area of the conductive surface of the film in electrical contact with the cathode roll through the liquid layer; d is the thickness of a gap between the cathode roll and the conductive surface of the film;

and σ is the conductivity of a liquid constituting the liquid layer.

The invention as a whole would have been anticipated and/or obvious to one having ordinary skill in the art at the time the invention was made because GB '103 teaches a similar method as presently claimed. Similar processes can reasonably be expected have the similar properties.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

I. Claims **2 and 7-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 551,103** ('103) as applied to claims 1 and 3 above, and further in view of **JP 07-022473** ('473).

GB '103 is as applied above and incorporated herein.

The method of GB '103 differs from the instant invention because GB '103 does not disclose the following:

- a. Wherein the plating layer is composed of copper, as recited in claim 7.
- b. Wherein the film is made of a polyimide resin or polyester resin, as recited in claim 8.

GB '103 teaches electroplating a metallic strip by immersion of the metallic strip

in an electrolytic plating solution (page 2, claim 1), which for example may be a tin plating solution (page 2, lines 38-40).

Like GB '103, JP '473 teaches the continuous electroplating of a strip material. The plating layer is composed of copper and the film is made of a polyimide resin or polyester resin (= a polyimide film was provided with a copper plating layer) [page 6, [0025]]. Generally the plating liquid of a presentation of copper sulfate-sulfuric acid is used for formation of a copper plating layer (page 5, [0020]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the plating layer and film described by GB '103 with wherein the plating layer is composed of copper; and wherein the film is made of a polyimide resin or polyester resin because GB '103 does not restrict the plating layer and film used in the method. Thus, copper would have been a suitable plating layer and polyimide would have been a suitable film to have used in order to create a substrate used for manufacture of a two-layer TAB tape for wiring materials as taught by JP '473 (page 1, [0001]; and pages 5-6, [0020] to [0025]).

c. Wherein the conductivity of the liquid constituting the liquid layer existing in the gap is controlled by means of the concentration of an electrolyte mainly composed of sulfuric acid, as recited in claim 2.

JP '473 teaches that generally the plating liquid of a presentation of copper sulfate-sulfuric acid is used for formation of a copper plating layer (page 5, [0020]).

The sulfuric acid disclosed by JP '473 would have been an electrolyte that the concentration thereof would have naturally controlled the conductivity of the liquid constituting the liquid layer existing in the gap to some degree.

Furthermore, it has been held that a newly discovered use or function of components does not necessarily mean the system is unobvious since this use or function may be inherent in the prior art. *Ex parte Pfeiffer* 135 USPQ 31.

II. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 551,103 ('103) as applied to claims 1 and 3 above, and further in view of Masui et al. ("Warp Control in Strip Processing Plant", *ISIJ International*, Vol. 31 (1991), No. 3, pp. 262-267).

GB '103 is as applied above and incorporated herein.

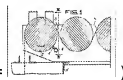
The method of GB '103 differs from the instant invention because GB '103 does not disclose the following:

a. Wherein the thickness d of the gap is from 20 μm to 500 μm , as recited in claim 4.

GB '103 teaches that a thin film of electrolyte serves to provide a good conducting medium between the surface of the roll and the strip (page 2, lines 8-11). The film of electrolyte also replaces the water and because of its high electrical conductivity, provides a medium for establishing the good electrical contact necessary between the strip and the conductor roll (page 2, lines 25-30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the thickness d of the gap described by GB '103 with wherein the thickness d of the gap is from $20\text{ }\mu\text{m}$ to $500\text{ }\mu\text{m}$ because the thin film of electrolyte disclosed by GB '103 creates a gap between the cathode roll and the conductive surface of the film. The thickness d of the gap is a result-effective variable and one skilled in the art has the skill to calculate the thickness d of the gap that would have determined the success of the desired reaction to occur, e.g., establishing a good electrical contact between the cathode roll and the conductive surface of the film (MPEP § 2141.03 and § 2144.05(II)).

b. Wherein the thickness d of the gap is controlled by means of a carrying tension of the film, as recited in claim 5.

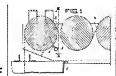


The film **S** disclosed by GB '103 naturally carries a tension (= [Fig. 1].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the thickness d of the gap described by GB '103 with wherein the thickness d of the gap is controlled by means of a carrying tension of the film because the carrying tension of the film disclosed by GB '103 would have naturally controlled the thickness d of the gap (which would correspond to the thickness of the thin film of electrolyte) to some degree.

It has been held that a newly discovered use or function of components does not necessarily mean the system is unobvious since this use or function may be inherent in the prior art. *Ex parte Pfeiffer* 135 USPQ 31.

c. Wherein the carrying tension of the film is from 10 N/m to 320 N/m, as recited in claim 6.



The film **S** disclosed by GB '103 naturally carries a tension ($=$)
[Fig. 1].

Like GB '103, Masui teaches the continuous electroplating of a strip material. Masui teaches that curl is restrained by line tension (page 262, "Introduction", first paragraph).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the carrying tension of the film described by GB '103 with wherein the carrying tension of the film is from 10 N/m to 320 N/m because carrying tension of the film is a result-effective variable and one skilled in the art has the skill to calculate the carrying tension of the film that would have determined the success of the desired reaction to occur, e.g., curl/ warp control (MPEP § 2141.03 and § 2144.05(II)).

III. Claims **9 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over

GB 551,103 ('103) as applied to claims 1 and 3 above, and further in view of **Beyer et al.** (US Patent No. 3,794,571).

GB '103 is as applied above and incorporated herein.

The method of GB '103 differs from the instant invention because GB '103 does not disclose wherein a material for constituting the plating layer and precipitated on a surface of the cathode roll is removed by means of a blade and/or an elastic body provided in contact with the surface of the cathode roll, as recited in claim 9.

Beyer teaches that continuous removal of copper metal requires a special cathode design such as a rotating drum cathode, the axis horizontally oriented, from which the copper is removed continuously by a doctor blade or other means (col. 3, lines 43-64; and col. 5, lines 8-21).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method described by GB '103 with wherein a material for constituting the plating layer and precipitated on a surface of the cathode roll is removed by means of a blade and/or an elastic body provided in contact with the surface of the cathode roll because copper electroplated on a rotating drum cathode would have been continuously removed by a doctor blade or other means as taught by Beyer (col. 3, lines 43-64; and col. 5, lines 8-21).

This is an art recognized suitability for an intended purpose (MPEP § 2144.07).

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to EDNA WONG whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edna Wong/
Primary Examiner
Art Unit 1795

EW
December 16, 2008